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## **CLAIMS**

## What is claimed is:

- 1. An abrasive wheel assembly comprising:
  - a flat abrasive wheel having a rear face, a front face and an outer wheel diameter, wherein the wheel is not internally reinforced;
  - (b) a front flange at the front face;
  - (c) a rear flange at the rear face; and
  - (d) a reinforcement layer, concentric with the wheel and applied to the front flange of the wheel, wherein said reinforcement layer has a polygonal shape selected from the group consisting of triangle, pentagon, hexagon and octagon, and a polygon largest diameter that is no greater than about 75% of said outer wheel diameter.
- 2. The abrasive wheel assembly of Claim 1, wherein the polygon smallest diameter is at least about 50% of said outer wheel diameter.
- 15 3. The abrasive wheel assembly of Claim 1, wherein the polygon smallest diameter is at least about 25% of said outer wheel diameter.
  - 4. The abrasive wheel assembly of Claim 1, wherein the reinforcement layer includes fiberglass cloth.
- 5. The abrasive wheel assembly of Claim 1, further comprising a second reinforcement layer between the rear flange and the rear face of the wheel.

- 6. An abrasive wheel assembly comprising:
  - (a) a flat internally reinforced abrasive wheel having a rear face, a front face and an outer wheel diameter;
  - (b) a front flange at the front face;
- 5 (c) a rear flange at the rear face; and
  - (d) a reinforcement layer, concentric with the wheel and applied to the front face of the wheel, wherein said reinforcement layer has a hexagonal shape, and a hexagon largest diameter that is no greater than about 75% of said outer wheel diameter.
- The abrasive wheel of Claim 1, wherein the polygon largest diameter is no greater than 66% of said outer wheel diameter.